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Publication date:
2016

Document Version
Publisher's PDF, also known as Version of record

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CROWDFUNDING FOR RENEWABLE ENERGY:

Survey Results on Public Perceptions and the Views of Crowdfunding Platforms and Project Developers

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May 2016

CROWDFUNDRES

Unleashing the potential of Crowdfunding
for Financing Renewable Energy Projects

www.crowdfundres.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 646435.

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Disclaimer

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 646435.The sole responsibility for the content of this report lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither INEA nor the European Commission are responsible for any use that may be made of the information contained therein.

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Introduction

Crowdfunding is part of the broader "alternative finance market" and involves (social media platform-based) raising of money from individual members of society who are brought together to provide the capital necessary for a specific investment project. The market in alternative project funding (i.e. outside the normal market for bank lending, traditional venture capital and security-market financing) has grown in the UK alone from £267m in 2012 to nearly £1.75bn in 2014 (Wardrop et al., 2015). Within this total, "equity-based" crowdfunding (where shares in a business are sold to investors in its early stages) grew in the UK over the same period by 410% to £84m, with an average amount raised of around £200k; "reward-based crowdfunding" (where individuals donate towards a specific project, with the expectation of a tangible, but non-financial, reward)grew in the UK by 206% to £26m, with an average amount raised of around £4k; and "donation-based" crowdfunding (where investors' donations provide funding for a charitable project and no tangible rewards are involved) grew in the UK by 77% to £2m, with an average amount raised of around £6k. Whilst the UK continues to dominate the European crowdfunding market, figures for the rest of the EU have also grown for all three types: €120.33m was provided via reward-based crowdfunding in 2014, compared to €24m in 2012; €82.56m was provided via equity-based crowdfunding, compared with €18.4m in 2012; and €16.34m was provided via donation-based crowdfunding compared with €4.3m in 2012. However, and notwithstanding the significant sums noted above, both Baeck et al. and Wardrop et al. note the dominance of peer-to-peer lending over all other forms of alternative finance - £1.2bn (UK) and €368m (rest of the EU) respectively.

This report presents the findings of three online surveys conducted in the second half of 2015 at the European level (and in several languages) regarding perceptions about crowdfunding in the renewables sector (Bergmann, Burton and Klaes, 2016; Kohl, 2016; Betz and Maidonis, 2016). The surveys form part of the CrowdFundRES project which aims to help unleash the potential of crowdfunding for renewable energy projects and is funded by the European Commission under its Horizon 2020 programme. The first survey we report on here is focused on public perceptions regarding the current state of and future prospects for the sector, with the others examining the views of crowdfunding platforms and RES project developers. In conjunction, these three surveys present an up-to-date picture of the RES crowdfunding sector that will inform the next stages of the CrowdFundRES project and feed into the formulation of guideline insights for crowdfunding platforms and RES project developers. The results of the surveys should also contribute meaningfully to policy discussions at both national and European levels. The next section outlines the findings of the survey of the European public. This is followed by the evidence obtained from the surveys of crowdfunding platforms and renewable energy project developers. The final section concludes with an overview of our findings and the key implications arising therefrom.

Survey of EU Citizens

METHODOLOGY

Design of the CrowdFundRES survey of the public was informed by study of prior survey work such as Baeck et al. (2014) and Wardrop et al. (2015), which was cross-checked against the pattern of responses obtained from members of the public via the European Commission (2014) crowdfunding consultation, and additional research undertaken by the Startup Europe crowdfunding initiative (cf. Alois 2014). A key pattern evident in this prior survey work, academic literature (e.g. Moritz et al. 2015) and consultations in the context of the aims of the CrowdFundRES project, relates to information asymmetries between members of the public as potential funders or investors, and the projects potentially supported by such means. A further insight relates to geographical focus, with France and Germany in particular generating high response rates, which ties up well with the selection of countries targeted in the CrowdFundRES project (Austria, Belgium, France, Germany, the Netherlands, and the UK).

The survey in this case was developed with the intention of exploring public perceptions regarding the use of crowdfunding for renewables, with a focus on perceived benefits, difficulties and potentialities. The questionnaire explores the views of the public whilst controlling for prior knowledge of/engagement with crowdfunding in general - and in the context of RES specifically - that might affect opinions. This design, and the manner of its analysis, enables differences in response according to background to emerge from the data and appropriate conclusions to be drawn. For example, this type of disaggregation facilitates examination of the extent to which opinions are influenced by prior experience of the use of crowdfunding in the renewables sector and other contexts.

An initial concept questionnaire was compiled during February and March 2015 through an iterative process led by the Dundee team and involving the lead partners of the other two surveys (ECN, WIP). This concept questionnaire, together with similar drafts from the other two surveys, was tested in moderated feedback sessions conducted at the first project workshop of the consortium in March 2015 to check for relevance of instruments among key stakeholder groups as represented in the CrowdFundRES consortium. Structured feedback gathered from this workshop fed into pilot drafts of the English versions of the three questionnaires, which in turn were implemented by the University of Dundee via Survey Monkey. The distribution list involved leads generated through snowballing for volunteers through personal contacts of members of the consortium during April to check for semantic consistency through piloting over a two-week period during which 32 responses were received. Analysis suggested that only minor modification were required and the public survey was then translated into Dutch, French and German and once more piloted for semantic consistency. Similarly, the developer survey was translated in May into French and German. The platform survey was administered in English only due to consistent feedback from the industry that

English was the de-facto standard of communication in the platform sector and running several language versions alongside each other would risk alienating respondents who were used to significant levels of English-based surveying across the sector. The three surveys went live on 15th June 2015, and survey dissemination was vigorously pursued according to a strategically-oriented survey recruitment plan.

All project partners (therefore representing academic institutions, law firms, crowdfunding platforms and renewable energy firms) disseminated the questionnaire via their social media networks to ensure that a reasonably knowledgeable sample of the European public would engage with the questionnaire. The evidence outlined below suggests that this aim was achieved; nearly 90% of those completing the survey indicated that they were aware of the crowdfunding concept, but this figure indicates that a meaningful number of responses were made by those without such an awareness, allowing appropriate comparisons to be made.

As Table 1 indicates, by the end of the survey period (30th November 2015), 478 responses had been received, 340 via the direct weblink to the Survey Monkey website and 138 via the embedded ECN weblink. However, several of those who logged into the survey did not complete any questions other than indicating a desired choice of language (the questionnaire was made available in Dutch, English, French and German) and indicating agreement with the terms and conditions. These responses were excluded from further analysis. As Table 1 shows, 21.3% of the 478 responses were removed from the sample on this basis.

Table 1 – Response Numbers

	WEBLINK	ECN EMBEDDED	TOTAL
Total number of responses	340	138	478
Number of useable responses	270	106	376

The final useable sample comprised 376 responses, with the breakdown across the four languages employed depicted in Figure 1 Responses were received from 29 different countries, with the largest proportion of the sample coming from France (with 63 useable responses) followed by Germany and the Netherlands (29 each), Austria (28), Belgium and the UK (18 each) and Ireland (14). Although not shown in the table, the other demographic information collected also suggested a diverse base had been engaged, with 34% (66%) of respondents who provided the information being female (male); of those who provided the information, 1 respondent was aged under 18, 39 aged 18-25, 127 aged 26-45, 83 aged 46-67 and 5 aged over 68.

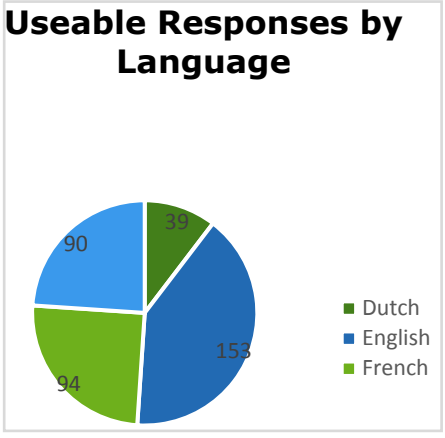


Figure 1 – Useable Responses by Language

RESULTS

Respondent Familiarity

The first part of the questionnaire enquired about respondents' experience and familiarity with crowdfunding in general and in the context of RES specifically. As Table 2 indicates, nearly 90% of respondents were familiar with the

broad crowdfunding notion, 45% of whom had invested via such platforms previously, with half of these having invested specifically in RES projects on this basis. Most of the latter (26) had been involved in a single project, although 16 had invested in five or more.

Table 2 - Familiarity
88.5% (330) were familiar with crowdfunding of which:
45.2% (149) had invested via crowdfunding of which:
50.3% (75) had invested in RES via crowdfunding

Table 3 – Investment Scale	
Scale of most Recent RES Crowdfunding Investment (€)	**Number of Respondents:**
<100	**6**
100 - 500	**27**
500 - 1500	**14**
1000 - 5000	**19**
5000 - 10000	**4**
10000 - 25000	**2**
25000 - 50000	**1**
>50000	**0**
Average (based on mid-point) = €2454.11	

Scale of Prior Investment in Renewable Energy Projects

Table 3 documents the scale of the investments in RES made by respondents. The figures ranged from six investments of less than €100 to one investment of between €25,000 and €50,000. The most common range was €100 - €500, but the mean amount committed (based on mid-points) was €2454, suggesting that the typical engagement in RES by European citizens is on a non-trivial scale.

Future Intentions regarding Crowdfunding for Renewable Energy Projects (CFRES)

Having enquired about prior behaviour and practices regarding RES, the questionnaire next sought to explore respondents' future intentions, contextualised by their prior experience. Inspection of Table 4 indicates that 39% of the sample planned to invest in RES over the next three years, with the figure rising to 61% for those with prior experience of crowdfunding in general and to 82% for those who had already invested in RES via crowdfunding platforms.

Table 4 – Future Intentions Regarding Renewable Energy Projects
Are you planning to invest in RES via crowdfunding in next 3 years? Yes: 39% Maybe 53% No:8%
Of those who have already invested via crowdfunding: Yes: 61% Maybe: 34% No: 5%
Of those who have already invested in RES via crowdfunding: Yes: 82% Maybe: 13% No: 4%

This pattern suggests that the extent of familiarity is linked with positivity when it comes to CFRES; such evidence is particularly encouraging in the light of continent-wide evidence of national governments reducing their commitment to the sector. Of particular note in this regard is the evidence that only 4% of respondents who had previously used crowdfunding in a RES context indicated that they did not intend doing so again over the next 36 months.

Factors Impacting on the Decision to Invest in Renewable Energy Projects

Table 5 reveals the wide range of factors taken into account when investment in renewable energy projects is considered. Inspection of the table reveals the diverse range of benefits perceived by the respondents, with eight factors being identified by more than 100 respondents. Amongst these, "Transparency" was, by some distance, the most often-cited (213 times) followed by "Sustainability impact" (174). To check whether the responses reflect informed knowledge of the process, the proportionate figures generated only by those who intend to invest in CFRES over the next three years are also shown in Table 5.

Table 5 - Factors taken into Account in RES Investment Decisions

Respondents taking particular factors into account in RES investment decisions		Among those planning to invest in CFRES in next 3 years
Transparency	**213**	**79%**
Sustainability impact	**174**	**62%**
Investment model	**163**	**61%**
Expected rate of return	**159**	**66%**
Technology type	**156**	**56%**
Developer reputation	**132**	**47%**
Time frame (duration)	**115**	**41%**
Geographic location	**114**	**36%**
Info in native language	**84**	**33%**

A project in development	**50**	**23%**
Existing op. project	**47**	**17%**
Cross border investment	**29**	**10%**

These provide a similar picture to that provided by the whole sample results, with Transparency highest at 79%. This evidence suggests that differences identified later in the study regarding the impact of prior CFRES experience on extant perspectives do not reflect fundamental differences in understanding of the practices and processes involved. Those completing the questionnaire were given the option to add additional comments in relation to this part of the survey and 38 responses were received. Whilst these covered a wide range of issues including project feasibility, tax status and governance, most related to the broad issue of community/environmental impact and ethics. In one case, the view was contextualised in terms of project financing as follows: "The social impact of the project would have a big influence on my decision – provided it made economic sense."

Crowdfunding Method Preferences

The questionnaire next explored opinions regarding the most appropriate crowdfunding method for RES investments. The five most-commonly identified methods in the broad crowdfunding literature (equity; reward; donation; debt in the form of bonds; and debt in the form of peer-to-peer lending) were employed and respondents asked to rank these in order of preference from 1 to 5 where 1 indicated the highest preference.

Inspection of Table 6 reveals the dominant role of equity, with an overall mean rank of 2.51 followed by peer-to-peer debt (2.82) and bond-based debt (3.03). The sub-group means shown in the table indicate some differences, with bonds generating a marginally higher average preference rank (2.51 v. 2.52) amongst those planning to invest in RES via crowdfunding. The popularity of bond-based crowdfunding grew as the extent of familiarity grew, whilst the opposite pattern was evident for the donation-based method, which was least popular overall, but particularity amongst those who had previously invested in CFRES projects (average rank = 4.43).

Table 6 - Crowdfunding Method Preference for Investment in Renewable Energy Projects (Average Ranks: 1 = highest; 5 = lowest)

	Equity-based	Debt-based (bonds)	Debt-based (p2p)	Reward-based	Donation-based
TOTAL	2.51	3.03	2.82	3.33	3.77
Familiar with CF	2.59	3.00	2.80	3.36	3.75
Invested via CF	2.43	2.89	2.56	3.36	4.11
Invested in RES via CF	2.53	2.54	2.41	3.44	4.43
Planning to invest in RES via CF	2.52	2.51	2.76	3.53	4.16
UK-based	2.31	2.65	2.88	3.14	4.23

The table also reveals the particular dominance of equity (and limited role for donations) in the UK. The average rank for the former amongst respondents based in the UK was just 2.31 (the strongest preference evident anywhere in the table), confirming for the first time that the pattern found for crowdfunding in general in the UK (Baeck et al., 2014; Wardrop et al., 2015) is specifically evidenced amongst RES. More generally, the apparent preference for equity-based crowdfunding over peer-to-peer lending suggests an idiosyncrasy in the RES sector of the crowdfunding market, as the afore-mentioned reports reveal that peer-to-peer arrangements dominate all other forms of crowdfunding in monetary terms. Thus, equity-based crowdfunding appears to be perceived as being particularly appropriate for funding investments in the RES sector.

The survey document allowed respondents to add additional comments regarding the issue of crowdfunding method preference and this yielded the highest number (89) of responses to any of the five fully open-ended parts of the questionnaire. A wide range of issues was seen as relevant, including project risk, environmental impacts, cost implications, timescale, and project size.

Crowdfunding as a Viable Alternative to Traditional Finance

The survey document next sought out perspectives on the notion of whether crowdfunding represents a meaningful alternative to traditional financing methods going forward. Inspection of the relevant results in Table 7 (s. next page) suggests an overwhelmingly positive view of crowdfunding amongst EU citizens across Europe, with an overall mean response of 4.07. However, the data also provide the first indication that crowdfunding is seen as particularly appropriate for renewable energy projects, with the mean response in the latter case of 4.31 significantly higher than the figure for investments in general. The various sets of disaggregated findings suggest that this pattern holds irrespective of respondents' prior experience of crowdfunding, with eight of the nine sub-group means being higher for investments in RES projects.

Table 7 – Crowdfunding as a Viable Alternative to Traditional Finance
(Average Responses: 5 = strongly agree; 1 = strongly disagree)

	Investments in RES	Investments in General	Diff.
TOTAL	4.31	4.07	0,24**
Familiar with CF			
yes	4.33	4.11	
(no)	(4.12)	(3.83)	
Invested via CF			
yes	4.42	4.20	
(no)	(4.23)	(3.99)	
Invested in RES via CF			
yes	4.51	4.27	
(no)	(4.31)	(4.13)	
Planning to invest in RES:			
yes	4.64	4.25	
(no)	(3.75)	(3.90)	
[maybe]	[4.16]	[3.98]	

The Perceived Benefits of Crowdfunding for Renewable Energy Projects

Table 8 (s. next page) provides evidence regarding the benefits of crowdfunding for RES perceived by EU citizens. Inspection of the table suggests the key advantages are related to moral/ethical issues, where a mean response of 4.38 resulted, followed by speed (mean = 4.04) suggesting that both hard and soft benefits respectively are amongst the important drivers of the optimism revealed elsewhere in this report.

In terms of the sub-sample results, disaggregation on the basis of planning/not planning to engage in RES via crowdfunding consistently drove the biggest differences in sub-group means. Those who were planning to take such action consistently generated the highest averages, indicating that those who intend to invest do so on the basis of a wide range of perceived benefits.

As it was clearly going to be impossible to list all the possible benefits of crowdfunding for RES via a closed-question with pre-specified responses, those completing the survey were given the option to add further responses. Seventy-three such responses were received. Whilst the responses reveal a wide range of possibilities - confirming much of the evidence underpinning Table 8 - the most commonly-cited advantages related to community involvement (including the sense of "ownership" provided by crowdfunding vehicles) and access to funds in cases where banks are simply not likely to provide the capital needed, i.e. "seed money."

Table 8 – Benefits of Crowdfunding for Renewable Energy Projects

(Average Responses: 5 = strongly agree; 1 = strongly disagree)

	All	Familiar with CF	Invested via CF	Invested in RES via CF	Planning to invest in RES via CF
		Yes (no)	Yes (no)	Yes (no)	Yes (No) (Maybe)
Reduction in European public funding	3.36	3.34 (3.61)	3.37 (3.29)	3.20 (3.57)	3.38 (3.05) [3.39]
Decreases in European banks' lending	3.65	3.63 (3.71)	3.72 (3.53)	3.76 (3.68)	3.78 (3.16) [3.62]
Speed of access to funds	4.00	3.99 (4.09)	3.97 (4.02)	4.02 (3.89)	4.21 (3.44) [3.95]
Low cost relative to traditional banks	3.79	3.81 (3.67)	3.78 (3.82)	3.72 (3.83)	3.93 (3.41) [3.75]
The morals and ethics of CF's collaborative basis	4.32	4.35 (4.13)	4.38 (4.30)	4.41 (4.36)	4.53 (3.67) [4.29]

Constraints on Future Growth in Crowdfunding of Renewable Energy Projects

The next part of the survey enquired about the significance of three possible difficulties relating to crowdfunding for RES, namely: lack of investor knowledge; the small typical scale of crowdfunding relative to RES needs; and the lack of regulation in the sector. The results (see Table 9 below) reveal that there were no cases, including for any of the sub-groups, where the mean reached a value of 4.

However, the highest overall average (3.71) was generated for the statement relating to investors' lack of knowledge about funding sources, a pattern consistent across all the disaggregations. This indicates that whilst the picture that emerges from this study as a whole is overwhelming positive, there is some residual concern about the way in which awareness of platform existence is disseminated.

Table 9 – Constraints on Growth in Crowdfunding for Renewable Energy Projects (Average Responses: 5 = strongly agree; 1 = strongly disagree)

	All	Familiar with CF Yes (no)	Invested via CF Yes (no)	Invested in RES via CF Yes (no)	Planning to invest in RES via CF Yes (no) [maybe]
Investors' lack of knowledge about funding sources	3.71	3.71 (3.83)	3.65 (3.72)	3.68 (3.64)	3.65 (3.78) [3.75]
The small scale of typical CF relative to RES needs	3.09	3.10 (3.13)	3.04 (3.15)	3.02 (3.05)	3.01 (3.44) [3.10]
Lack of regulation in the CF sector	3.11	3.09 (3.18)	3.00 (3.19)	2.97 (3.05)	2.94 (3.06) [3.24]

As with the possible benefits of crowdfunding for RES, there was no likelihood of all the potential constraints on growth in the sector being articulated and specified in the survey and so respondents were again given the chance to make additional open-ended comments. 49 of the participants chose to engage in this way; a consistent theme in the views expressed relates to the issue of lack of awareness and experience on the part of both platform providers and investors themselves, confirming the impression from the closed-end questions of this issue dominating any concerns about scale or sectoral regulation.

Perceptions Regarding the Future of Crowdfunding

Having explored views regarding the explicit benefits and limitations of crowdfunding in a RES context, the questionnaire concluded by asking respondents to indicate the extent to which they believed that crowdfunding was likely to grow in the next five years, both in general and for RES projects specifically. Inspection of Table 10 above reveals that growth in use of crowdfunding is widely predicted, although the mean score for the notion in a RES context (4.23) was significantly higher than for investments in general (4.08). This pattern was repeated in virtually all (eight out of nine) disaggregations of the data reflecting prior experience and familiarity, suggesting that optimism regarding crowdfunding – in a RES context in particular – is pervasive amongst EU citizens.

Table 10 – Is Crowdfunding Likely to Grow Over the Next Five Years?
(Average Responses: 5 = strongly agree; 1 = strongly disagree)

	Investments in RES	Investments in General	Diff.
TOTAL	4.23	4.08	0.15**
Familiar with CF: yes	4.24	4.10	
(no)	(4.17)	(3.92)	
Invested via CF: yes (no)	4.46	4.22	
	(4.02)	(3.97)	
Invested in RES via CF: yes (no)	4.55	4.26	
	(4.35)	(4.16)	
Planning to invest in RES: yes			
(no)	4.58	4.25	
[maybe]	(3.44)	(3.79)	
	[4.09]	[4.01]	

After completing this part of the survey, respondents were asked to offer any final observations and thoughts regarding crowdfunding and/or crowdfunding for RES. Thirty-five responses were made in this context, making a range of points including: concern over regulation; the need to "excite" the RES sector in the manner of Arts/Culture; the potential for the sector following the global banking crisis; the concern over the "niche" aspect of crowdfunding; lack of investor understanding; problems with government ideology; the need for decentralisation and scalability; the potential role of tax policy in developing the market; and issues concerning RES business plans. In 26 cases, those making comments also agreed to follow-up by the research team and so a sample of five cases where the views expressed seemed broadly representative of the full sample - but with the potential to benefit from further elucidation - were selected for further analysis. Two of those approached offered further direct comment. In one case, the respondent focussed on the potential role of crowdfunding of RES in a developing country context given the small-scale (relative to normal corporate projects) of the funding, with the result being a "nicely-packaged solution" for emerging nations. The second respondent who provided additional comments made detailed representations concerning the adverse impacts of the replacement in the UK of the Financial Services Authority by the Financial Conduct Authority. The latter, in this individual's opinion, was much less supportive of co-operative status being granted to energy projects. This comment suggests the need for caution and careful observation of regulatory bodies' actions in the increasingly uncertain environment regarding governmental support of non-standard business funding models.

CONCLUSIONS FROM EU CITIZEN SURVEY

The survey of EU citizens provides the first detailed evidence regarding the EU public's perception of the role of crowdfunding as an investment vehicle for renewable energy projects (RES). The study yielded a sample of 389 usable responses, drawn from 29 nations. Follow-up investigation amongst a sample of those who agreed to such enquiry also took place. One of the most striking patterns in the

data was that the results were broadly consistent irrespective of respondent background, i.e. familiarity with crowdfunding, and experience of it in general and for RES specifically.

In terms of the factors affecting the decision to undertake RES investments, transparency was, by some margin, the most frequently cited, followed by sustainability impact. Views in this regard were found to be similar irrespective of plans regarding the use of crowdfunding in a RES context, suggesting that differences in opinions across sub-groups of respondents evidenced elsewhere in the survey were not simply reflecting different understandings of the process itself.

As regards specific forms of crowdfunding, equity dominated as the type most likely to be employed in a RES context. Whilst this pattern was found across virtually all sub-groups, the strongest support for the method came from UK-based respondents. This finding provides the first evidence that a clear trend reported in the broader crowdfunding market is strongly evident in the RES sector specifically. Relatedly, the overwhelming dominance of peer-to-peer financing in the alternative financing s reported elsewhere does not appear to be reflected in the RES market, suggesting that the equity crowdfunding route is seen as being especially apposite for investment in renewables.

Notwithstanding the points noted above, the most important finding in the public survey is of robust cause for optimism regarding the future of crowdfunding for renewables. Five specific pieces of evidence in the study permit us to draw this conclusion:

i. *The propensity to invest in RES via crowdfunding was strongest amongst those with prior experience of this funding method, particularly in the RES context. This result indicates a favourable experiential basis for future such investment in the sector.*

ii. *Crowdfunding was seen as more viable for RES than for investments in general, irrespective of prior familiarity/experience. This again points to a clear belief in the particular appropriateness of crowdfunding platforms for investments in renewables.*

iii. *Growth in crowdfunding was seen as significantly more likely for RES than for investments in general, consistent with the evidence in points (i) and (ii) above.*

iv. *Those who invest in RES via crowdfunding do so on the basis of a wide range of perceived benefits, although moral/ethical issues dominate, with speed also important.*

v. *There was no evidence of any strong worries regarding any particular limitation regarding the employment of crowdfunding for RES. In so far as there was some concern, it related to the issue of investor awareness regarding funding sources, suggesting a priority for action.*

The final point is likely to be important – and require nurturing to ensure its maintenance – as the crowdfunding sector faces challenges exacerbated in the particular case of RES by weakening European governmental support for the sector in the current fiscal regime. Nonetheless, the findings in this report point in a multi-faceted way to grounds for positivity in the context of RES investments. The current challenges need not prove insurmountable as long as the optimism underpins clear-headedness – and ingenuity – in attracting the capital needed to ensure critical mass going forward.

Survey of Crowdfunding Platforms

METHODOLOGY

An initial baseline questionnaire aimed at crowdfunding platforms was compiled during February and March 2015 through an iterative process led by ECN and the lead partners of the other two surveys. This baseline questionnaire was tested in moderated feedback sessions conducted at the first project meeting of the consortium in March 2015 to check for relevance of instruments among key stakeholder groups as represented in the CrowdFundRES consortium. Structured feedback gathered from this workshop fed into a pilot draft of the platform survey, which after piloting was then implemented by UNIDUN using Survey Monkey. Unlike the other two surveys, the platform survey was presented in English only due to consistent feedback from the industry that English was the standard communication medium in the platform sector, and that running several language versions alongside each other would risk alienating respondents who had got used to significant levels of English-based surveying across the sector. The survey went live on 15th June 2015, and survey dissemination was vigorously pursued according to a strategically oriented survey recruitment plan (see Table 1).

Design of the Survey Questions

The survey questions were designed to ensure applicability to: (a) crowdfunding platforms in general; and (b) crowdfunding for renewable energy projects. As the survey was not just sent to platforms specialising in RES, identification of the perceived obstacles to crowdfunding in general was facilitated, as well as problems specifically linked to crowdfunding for RES projects.

Subsequently, the obstacles were grouped and prioritised, with five areas identified:

1. Obstacles related to crowd investors
2. Obstacles related to project developers
3. Obstacles related to characteristics of a crowdfunding platform
4. Obstacles related to legal aspects
5. Obstacles related to competition and partnership

Next, the questions were formulated by categorising them on the following bases:

- Profile of the Crowdfunding Platform; Market: potential barriers and perspectives; Financial: potential barriers and perspectives; Legal: potential barriers and perspectives; Other barriers and perspectives

The survey was developed in such a way that it would take 10-15 minutes to answer all questions.

Dissemination of the Survey

Dissemination of the survey took place via the various online channels listed in Table 1 between June 15th 2015 and March 2016. Over this period, the CrowdFundRES project website registered 136 views of the Platform survey page, from 113 unique users.

Table 1: Dissemination Channels

Channel	Means	Date	Nr.	Target Group
ECN members network	1-to-1 E-Mail	29.09.2015	28	Crowdfunding Platforms RES and non-RES
ECN network (in the target countries UK, Belgium, Germany, France, Austria, the Netherlands)	1-to-1 E-Mail	15/16.10.2015	30	Crowdfunding Platforms RES and non-RES
Broader ECN network (covenant of mayors, project partners and ECN contacts)	1-to-1 E-Mail	30.09.2015	10	Municipalities
ECN contacts: Other project partners (CitizenEnergy)	1-to-1 E-Mail, Newsletter, Facebook Post	29.09.2015	?	RES related stakeholders, Crowdfunding platforms
ECN Website	Post on News & Surveys	15.10.2015	?	Webpage visitors
ECN Twitter	Twitter Post	30.09.2015 14.12.2015 17.03.2016	> 1820	ECN Twitter Followers
ECN Facebook	Facebook Post	21.03.2016	> 500	ECN Facebook Like
ECN Newsletter (September)	Newsletter	15.09.2015	> 3500	ECN members, newsletter recipients

ANALYSIS AND RESULTS

Descriptive Statistics of Population Surveyed

As of March 25th 2016, 49 responses to the platform survey had been received. However, several of those who logged into the survey did not complete any questions, or only the first two, and then dropped out of the survey. These responses were excluded from the sample. The final useable sample comprised 27 responses. As Table 2 shows, the majority of the usable responses (37%) were from French platforms, with around 26% from Germany. UK-based platforms represented just 7.4% of the sample, with other European countries providing the remaining 45%. Considering that the UK crowdfunding market is by far the most developed in Europe, it is evident that the response profile is not directly reflective of the sector as a whole, with the propensity to engage with the survey varying across the continent.

Table 2: Geographic coverage of the platforms

Market (multiple choice possible)	Responses (in %)
French	37.0
Germany	25.9
Netherlands	22.2
UK	7.4
Other (Poland, Spain, Denmark, Italy, Portugal and Scandinavia)	44.4

French was the most used language on respondents' platforms (46.2%), followed by English (42.3%) and German (26.9%). Encouragingly, given the potential of cross-border fund-raising models in the modern global financial market, the vast majority (80.8%) of the respondents stated that they have plans to expand to other European countries. The overwhelming majority of the sample (86.4%) reported receiving financial support from private companies. More than half co-operate with associations (54.4%) or receive funding from national authorities and agencies (59.1%), with the figure decreasing to 27.3% for those receiving support from EU authorities and agencies and to 31.8% for those who are supported in similar ways at a local level.

Renewable Energy Project Share and Crowdfunding Specifications

The questionnaire next explored respondents' experience with renewable energy projects taking into account the crowdfunding model used on their platform. Table 3 documents the total number of projects and RES projects respectively that the respondents had hosted on their platform in 2014. One platform clearly stands out in the table, with more than 5000 (5407) projects online, covering the French, German, Dutch and UK market, but only two of these related to RES. Another respondent, covering the Portuguese market, had a total number of 325 live projects, but none were RES-based. In terms of RES projects, the results show that most platforms (7) had between 1 to 9 in 2014. The respondent with the highest number of RES projects (60) was from the Spanish market, followed by a French platform with 12 RES projects.

Table 3: Total number of projects on platform in 2014

Scale of number of projects	Total number of projects on platform (Response Count)	Total number of RES projects on platform (Response Count)
1 - 9	5	7
10 - 49	5	2
50 - 99	5	1
100 - 499	2	0
500 - 999	0	0
1000 - 4999	0	0
>5000	1	0

Respondents were also asked about the number of projects that had been successfully funded in 2014. Inspection of Table 4 reveals that the range between 1 and 49 successfully funded projects is the one where the majority of the respondents lay, although one platform had 303 successfully funded projects. This platform is based in France and covers the European market; it has already hosted RES projects, but is not specialised in the renewables sector. More generally, the results indicate that the total number of successfully funded RES projects is low when compared to all fully funded projects on a platform, although a Spanish platform specialising in RES projects reported successfully funded 60 such investments. The majority of the survey sample (8 out of 11) fell in the range of 1 to 9 successfully funded RES projects.

Table 4: Total number of projects successfully funded in 2014

Scale of number of projects successfully funded	Total number of projects (Response Count)	Total number of RES projects (Response Count)
1-9	6	8
10-49	6	2
50-99	3	1
100-499	1	0
500-999	0	0
1.000-4.999	1	0
<5.000	0	0

Again, whilst other surveys have revealed that the UK has by far the largest amount raised and number of projects funded through crowdfunding (Crowdsurfer et al., p. 26, 2015) the prior literature has not focused specifically on RES. However, the results of the present survey do not

allow robust conclusions to be drawn in terms of project activity for the UK, as only 4.3 % of the population surveyed related to this market.

A further question in the survey enquired about the average amount (in €) raised per project. Table 5 below shows the results. One respondent, in this case operating in the Netherlands, is very different from the rest. This platform reported an average amount raised of 1.5 million € for all projects The highest amount raised on average for RES projects was at 300.000 €.

Table 5: Average amount raised per projects (in €)

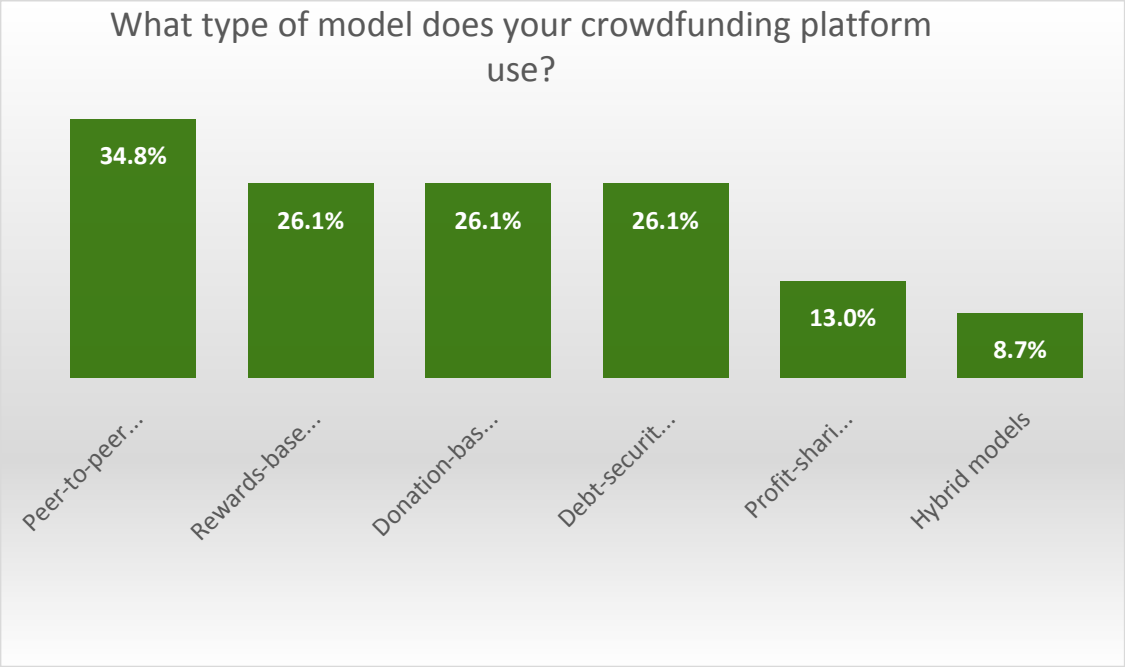
Scale of amount raised on average (in €)	All Projects (Response Count)	RES Projects (Response Count)
10 - 99	3	2
100 - 499	0	0
500 - 999	1	1
1000 - 4999	2	0
5000– 9.999	0	1
10.000 –49.999	3	2
50.000 – 99.999	6	3
100.000 – 499.999	1	1
500.000 – 999.999	0	0
1.000.000 – 1.500.000	1	0

Other studies have indicated that the French market saw a marked peak in activity in June 2014 driven by large equity projects.

Having explored the number of projects and the average amount raised per project (in €), respondents were asked about the specifications of their platform in regard to the crowdfunding model used - and whether they specialise in RES. The results are depicted in Figure 1 and show that equity crowdfunding is the most popular model, used by more than half of the sample (60.9 %).

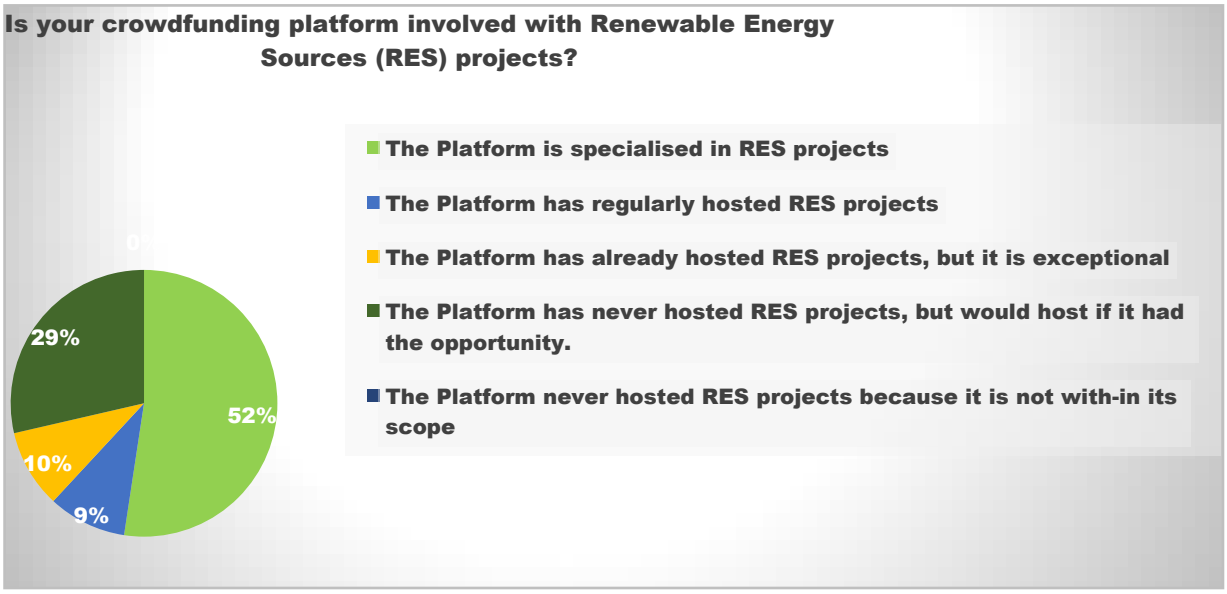
Peer-to-peer lending is the second most common model, used by around 34.8%, whereas three other types were used by 26.1% of the sample, namely: rewards-based-crowdfunding, donation-based-crowdfunding and debts-securities crowdfunding. These figures are in line with those reported in the survey of public perceptions reported elsewhere in this project regarding the most appropriate crowdfunding form for RES investments

Figure 1: Crowdfunding Model used by platforms



Again, it is important to note that these findings require a degree of circumspection, as the number of responses reflect only a sub-sample of European crowdfunding platforms. This becomes clear in the context of the Crowdsurfer (2015) report which examined platform funding types across the whole, and reported that the rewards-based and equity models were the most common, and exhibiting significant growth. From 2009, the market shares of these models steadily increased, whereas the share of donation-based crowdfunding platforms has decreased (Crowdsurfer et al., p. 23, 2015). Hence, the outcomes of the present platforms survey correspond with the findings of the Crowdsurfer study as regards the equity model, whereas the findings relating to rewards-based crowdfunding do not. As regards the respondents' involvement in renewable energy projects, several questions were posed to assess their experience. The first was formulated in such a way as to find out to what extent the surveyed platform has experience in renewable energy projects. Figure 2 illustrates the outcomes.

Figure 2: Involvement in RES projects



This question was answered by 21 respondents and the findings are divided into five areas illustrated in Figure 2:

1. The Platform is specialised in RES projects.
2. The Platform has regularly hosted RES projects.
3. The Platform has already hosted RES projects, but it is exceptional
4. The Platform has never hosted RES projects, but would host if it had the opportunity.
5. The Platform has never hosted a RES project, because it is not within their scope

The platform is specialised in RES projects (52.4%).

Eleven of the 21 respondents can be allocated to this category.

- Four cover the French market only. While two of them use the debt-securities and equity model, one uses peer-to business lending, and the fourth one uses the equity model only
- Two cover the German market only. One of them uses debt-securities crowdfunding and the other one uses the equity as well as the profit-sharing/revenue-sharing model
- One covers the Dutch market only, using the equity model only
- One covers the Spanish market only, using the equity model only
- One covers the Italian market only, using the equity model only
- One covers the French, German, Dutch and the UK market, using all five models
- One covers the Canadian market only, using the equity model and the peer-to-peer-lending model. Note: this answer is not relevant for our present study.

The dominance of the equity model is once again revealed by these findings, although the number of responses to this question is low. Nonetheless, the findings reveal that those respondents who specialise in RES projects do not make use of the rewards-based model at all.

The platform has regularly hosted RES projects (9.5%).

Two of the 21 respondents acknowledged the regular hosting of RES projects. One of these platforms use only the equity model, covering the French market, whereas the other platform uses both equity and debt-securities crowdfunding and covers the Dutch market.

The platform has already hosted RES projects, but it is exceptional (9.5%).

This category contained two respondents, neither of whom uses the equity crowdfunding model. One platform offers SME crowd lending on their platform and covers the French market only, with the other using both rewards-based and donation-based crowdfunding, and covers four markets (France, Germany, Netherlands and the UK).

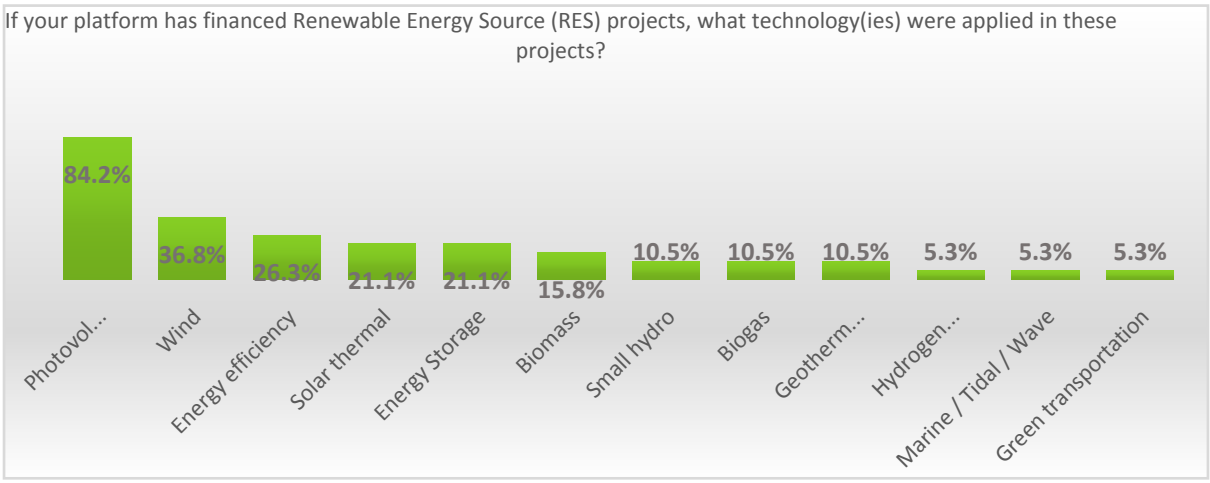
The platform has never hosted RES projects, but would host if it had the opportunity (28.6%).

There were six responses in this category.

- One covers the Spanish market, where peer to peer lending, equity, rewards-based and donation-based models were used (note: this respondent is not a platform but an advisor to project developers in Europe).
- One covers the Portuguese market, using rewards- and donation-based funding.
- One covers the German and the Dutch market using four models: rewards- and donation-based, profit sharing, debt-securities funding, and hybrid models.
- Two cover the French market; one uses peer-to-business funding, the other uses peer-to-lending funding
- One covers the Greek market, using the equity model

Following enquiry about on respondents' specialisation, the survey next explored the different technologies involved in the RES projects hosted by the platforms in 2014. This question was only answered by respondents that have financed RES projects in the past; Figure 3 illustrates the results.

Figure 3: Technologies applied in RES projects



Photovoltaic technology was applied in more than 84,2% of the RES projects, followed (with a large gap), by wind energy (36,8%) and energy efficiency (26,3%). Solar thermal and energy storage were both used for 21,1% of the projects, with biomass employed by only 15,8%. Small hydro, biogas and geothermal are ranked number 6 amongst the technologies applied in RES projects with 10,5% each (i.e. two respondents) while the remaining technologies, namely hydrogen and fuel cells, marine/tidal/wave technology and green transportation, were used by 5,3% each (i.e. one platform in each case).

In terms of the average size range (in kWh) of the RES projects, the respondents had the opportunity to give multiple answers. The outcomes, which are illustrated in Table 6, show that the lower ranges (from smaller than 100 kW to between 1 MW and 10 MW) were the most common.

Table 6: Average size range (in kWh) of RES projects

Smaller than 100 kW	7
100 kW to 1 MW	7
Between 1 MW and 10 MW	7
Between 10 and 100 MW	1
100 MW and greater	0

Further contextualising of the RES projects and platform specialisation took place in the survey by enquiring as to whether the platforms that have financed RES projects use due diligence in their work. The question had 20 responses with the majority (16) stated that they do apply due diligence. Of the 16 that apply due diligence, 11 have experience in conducting it in-house, whereas three outsource it regardless of their existing experience. Table 7 illustrates the outcomes of the two questions.

Table 7: Application of due diligence for RES projects

	Application of Due Diligence (Response count)
Yes	16 Experience in applying Due Diligence (Response Count) Yes (in house) 10 Yes (outsourced) 3 No 2
No	4

Assessment of the obstacles that crowdfunding platforms face both in general and in regards to RES projects was one of the main aims of this survey. A number of related statements were therefore presented in the survey and the respondents asked about the extent to which they agreed with each one.

In regards to obstacles to crowd investors, the majority of the respondents (15 out of 21) agreed that the lack of information and low-level experience of non-professional investors towards alternative investment products hinder the growth of crowdfunding in their country. Similarly, 11 out of 21 agreed, and 4 out of 21 strongly agreed that: *The potential lack of transparency on a*

project's progress after a crowdfunding investment is made is a barrier for the investment of the crowd in projects.

The evidence about obstacles relating to project developers was not as clear-cut as in the previous case, with the answers more evenly distributed and often neutral (i.e. neither agree nor disagree). Six out of 19 respondents disagreed and one strongly disagreed with the notion that the process from the launch of the project to the effective access to finance is too long for RES developers who use crowdfunding platforms. However, four out of the 19 agreed while one strongly agreed with the statement; seven demonstrated their neutrality (neither agree nor disagree). Interestingly, considering the time and effort that is necessary for a successful crowdfunding campaign, the results suggest that the respondents do not overwhelmingly agree that these issues limit the attractiveness of crowdfunding for RES projects. Five agreed and another five neither agreed nor disagreed with the statement to this effect, while four respondents indicated their disagreement and two strongly disagreed.

As for the obstacles relating to the characteristics of a crowdfunding platform, the majority of the respondents either agreed (9) or strongly agreed (4) with the view that having only a limited number of projects on a platform is likely to discourage crowd investors / project developers. Most of the respondents also agreed (6) or strongly agreed (7) that language barriers are a key obstacle to attracting cross-border investors on a platform when a crowdfunding platform is only available in its national language.

A case where respondents indicated agreement particularly strongly related to legal aspects, namely: The absence of a European harmonised legal framework. Nearly half the respondents indicated their strong agreement with this statement.

After completing this section of the survey, respondents were asked about any additional obstacles to the crowdfunding of RES projects that they would like to highlight. The four concrete statements made in this context were:

- "Regulatory uncertainty (not too much regulation but changing regulation). Generic perception of crowdfunding, drawing the same conclusions for equity, donation and debt crowdfunding."
- "Intransparency/incompleteness of info on projects from the project developers"
- "We should have one common banner: Citizen funding for energy transition in Europe, to communicate all together!"
- "Robust and sustainable RES projects. Willingness of stakeholders to work on novel business models, needed to launch RES projects on the platform."

CONCLUSIONS FROM CROWDFUNDING PLATFORM SURVEY

This report presents and analyses the outcomes of a survey-based investigation of the obstacles European crowdfunding platforms face both in general and when dealing with RES projects specifically. The study yielded a sample of 27 useable responses. Due to the rather small response rate, the study results need to be approached with circumspection, as they do not provide a full picture of the crowdfunding sector itself. Neither do the results fully cover the fast changing landscape of crowdfunding platforms operating in the renewable energy sector in Europe.

The work yields five main implications as listed below. These are of relevance to, and will have influence on, future tasks in the CrowdFundRES project, in particular the development of Policy

guidelines and the organisation of two Workshops with Crowdfunding Platforms and Project Developers taking place on May 24th 2016 in Brussels.

a. The results suggest that an information asymmetry exists regarding alternative investment products between non-professional investors and the crowdfunding platforms. This discovery implies the need for raising awareness of crowdfunding amongst non-professional investors and sharing information about crowdfunding itself. Hence, it is likely to be important to find ways to give more visibility to crowdfunding platforms, in particular RES specialised ones, going forward in order to attract investors interested in investing in renewable energy products.

b. The outcomes illustrate a perceived lack of transparency and completeness of information on the part of project developers. Hence, the latter group could usefully adapt their practices and present more comprehensive and complete description of their projects, such that potential investors will be able to place more trust in extant plans. In this context, crowdfunding platforms should give clear instructions (e.g. a catalogue of criteria) that need to be followed concerning project description.

c. The vast majority of those surveyed have plans to expand to other European countries and so concerns regarding the absence of a European harmonised legal framework are a key issue. The strength of views regarding obstacles relating to legal aspects underline this argument. Hence, the evidence points to the need for a single legal framework amongst EU member states that would simplify cross-border investment processes.

d. The number of RES projects on the platforms surveyed is rather low. The responding platform with the highest number of RES projects (60) covers the Spanish market, followed by a platform covering the French market with 12 RES projects. This evidence might imply a lack of engagement between RES project developers and platforms, suggesting a need to bring these parties together and thereby increase the number of projects on the platform; this should in turn attract more crowd investors in the future. Additionally, the results identified that the high uncertainty of financial returns on RES projects serves as an obstacle to attracting investors; the failure of several RES projects or projects with very low returns in the past might explain this. Two possible ways of addressing this issue might be to: (a) promote best practices in this regard; and/or (b) increase the use of crowdfunding models other than (the still dominant) equity, where the focus is not solely on profit-making.

The fact that five out of 17 respondent platforms have never hosted RES projects - but would do so if they had the opportunity - supports the conclusion above. An important task for the upcoming Workshops with platforms and developers will involve approaching these five respondents and finding out what specific changes would be needed to persuade them to host RES projects. Five respondents cited specific additional barriers to the crowdfunding of RES projects and these will need to be addressed in the Workshops as well.

Survey of Renewable Energy Project Developers

METHODOLOGY

An initial draft of the questionnaire for project developers was prepared during February and March 2015 through an iterative process that involved those leading on the two surveys discussed earlier. This concept questionnaire, together with similar drafts from the other two surveys, was tested in moderated feedback sessions conducted at the first project meeting of the consortium in March 2015 to check for relevance of instruments among key stakeholder groups as represented in the CrowdFundRES consortium. Structured feedback gathered from this workshop fed into pilot drafts of the English versions of the three questionnaires, which was implemented on a University of Dundee instance of Survey Monkey and distributed to pilot leads generated through snowballing for volunteers through personal contacts of members of the consortium during April to check for semantic consistency through piloting over a two-week period. Analysis of responses received did not suggest more than minor modification and the developers' survey was then translated into French and German and once more piloted for semantic consistency before final dissemination.

Design of the Survey Questions

This survey contained a total of 32 questions designed to fulfil the following objectives:

1. Analyse the experience of project developers with RES project financing, considering three methods:
    a. Bank loans
    b. Public funding
    c. Crowdfunding
2. Major gaps and barriers related to RES project financing the have identified.

Input to this survey was sought from renewable energy project developers and other stakeholders relevant to the development of renewable energy projects. The following types of renewable energy project developers were identified:

- Commercial renewable energy project developers;
- Renewable energy cooperatives;
- Energy service companies (ESCOs);
- Public entities

Considering the objectives and the main target groups to this survey, the questions were elaborated in three main sections:

1. Screening/characterization of the project developer;
2. Project developers' experience and impressions regarding RES project financing via bank loans and public funding / support.
3. Project developers' experience and impressions about crowdfunding as a financing method for RES projects.

Financing energy projects depend on many factors combined. The structure itself of the financing scheme will vary upon participants/investors profile, the sources of financing and how the benefits will be distributed. Not only is the project economic feasibility important in terms of future cash flows and technology risks (size, capacity, grid infrastructure, energy resource availability) but other risk factors related to project's location and planning, such as permitting, political interests, economic development and community support, influence in many ways the investment conditions and therefore, the development of a project. RES projects impose additional finance challenges which are related (among others issues) to variability of the resource availability, volatile regulation environment in Europe, higher capital costs – competitiveness with other sources of energy – and long return timeframes.

Having in mind that RES project financing is a topic that cannot be generalized because it depends on the unique conditions of the project, this survey follows a qualitative approach. This approach aims at collecting perceptions, experience and intentions regarding RES project developing in terms of difficulty levels, degrees of importance, barriers, gaps, perceived potential, as well as advantages and disadvantages. In addition, this survey provides a participative approach, with several complementary open ended responses aiming at providing an opportunity for the respondents to express their ideas.

This survey also attempts to analyse regional / national perceptions on RES project financing. During the screening section, respondents were asked to choose one country of which they would consider to respond questions with a specific regional and national scope. The intention behind this is to understand the regional / national / local variations of the different aspects related to financing of RES project in Europe.

Survey Dissemination

The three surveys went live on 15th June 2015, and survey dissemination was vigorously pursued according to a strategically oriented survey recruitment plan. All project partners (and therefore representing academic institutions, law firms, crowdfunding platforms and renewable energy firms) disseminated them via their social media networks to ensure that a reasonably knowledgeable sample of the target groups would engage with the questionnaires.

The distribution channels used for reaching the identified types of project developers for collecting the input analysed in this report include:

- European and national associations of renewable energy industry associations that also have commercial project developers as members (e.g. SolarPower Europe, APERe, EWEA)
- Associations of energy cooperatives and citizens communities (e.g. REScoop.eu, REScoop.be, Climate Alliance, CO-POWER and Citizenergy projects)
- Associations of Energy Service Companies (ESCOs)
- The network of European Energy Agencies (ManagEnergy)
- Conferences attracting renewable energy project developers

- Communication networks and platforms of renewable energy experts (e.g. Leonardo Energy and Solarplaza)
- Partners contacts and social networks

With the objective to widen the dissemination geographical scope, the survey was made available in three languages: English, French and German. The choice of the languages follows the trends of crowdfunding for renewable energy developments, with the largest markets being the UK, France and Germany. The survey aimed at all countries of the EU with the target countries being Austria, Belgium, France, Germany, the Netherlands and the UK.

It is difficult to gauge the exact response rate as we do not know the total number of recipients to all different lists used. We do know that the initial invitation was sent to more than 2500 contacts with a project developer profile, from which 239 users responded to the invitation visiting the survey (9.6% maximum) with 132 of them actually entering the survey space which indicates a response rate of 5.3% maximum.

Out of the 132 active survey respondents, 66 provided significant input, which has been processed to produce this report. From these 66 respondents, 32 responded to all questions of the survey.

ANALYSIS AND RESULTS

Descriptive Statistics

The project developers who have answered the survey were characterized considering the following:

- Company structure
- Renewable energy technology expertise
- The size range of the projects
- The geographical coverage of their activities
- Experience in RES development
- Previous experience with crowdfunding

Company Structure

Number of answers	
Limited company	37
Cooperative	8
Energy service company (ESCO)	6
Public entity (e.g. municipality)	3
Other	12
Total	**66**

Others:	
Energy Agencies	2
Non-profits	6
Consultants	2
Corporation	1
Not identified	1

Social enterprise	1
Associations	4
Not identified	1

The targeted groups for this survey were the main actors from RES project developing activities, such as commercial project developers, renewable energy cooperatives, municipalities and ESCOs.

The survey reached all its main target groups with a balanced distribution of the participation of different actors involved, where most of the survey respondents (37) represent privately owned commercial developers, within the category “Limited company”. The survey also reached 8 cooperatives, which is an important target group for RES project developing with crowdfunding.

Energy cooperatives represent important forms of local community based ownership of renewable energy projects. The cooperative concept often shares similar principles with the crowdfunding concept and has a complementary potential when it comes to RES project developing.

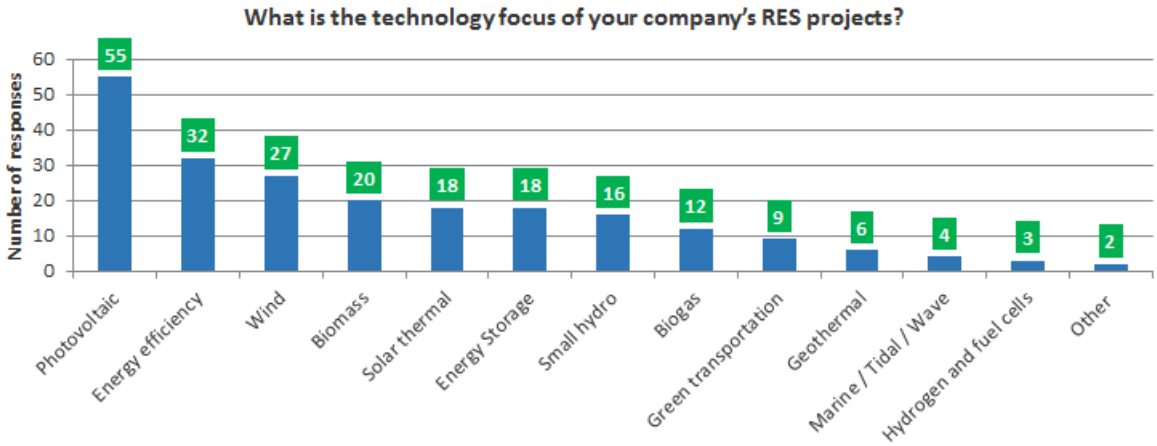
Six respondents identified themselves as an ESCO. ESCOs are also a relevant target group in this survey, since the central scope of their activities are compatible with the profile of crowdfunded projects. ESCOs are normally associated with the developing of small and medium scale sized projects that have the potential to bring revenues/savings, for example, solar thermal, solar PV in combination with energy efficiency measures.

In the "Others" category, project developers represent different groups such as energy agencies, international and non-profit organizations as well as consultants. Six respondents have claimed to be a non-profit and have further identified themselves as one social enterprise and four associations, for which one is a farmers' association. Farmers are often land owners with the potential of using their land for hosting RES projects.

Although with a smaller representation, three respondents from public entities replied to the survey. Their view is important to us because public entities have roles in different stages relevant to RES project developing, for example:

- As one party in energy provision, e.g. generation, transmission, distribution or operator.
- Elaborating policy, regulation and incentives.
- Being the control authority for permitting and licensing, construction, performance and security regulation.
- Promoting and engaging the community.
- A direct beneficiary in RES projects for public use.

Technology



In this question, the term technology refers to different sources of renewable energy generation as well as to different kinds of projects such as energy efficiency and green transportation.

The range of different technology expertise covered in this survey is quite wide. As shown in Figure 1, around 80% (55) of the respondents of this question are involved in PV project developing. Besides PV, energy efficiency and wind energy are among most of the project developers' capabilities. The category "Others" includes the involvement of two respondents in smart grid projects, clean coal and clean gas technologies, which involve approaches that mitigate emissions of carbon dioxide.

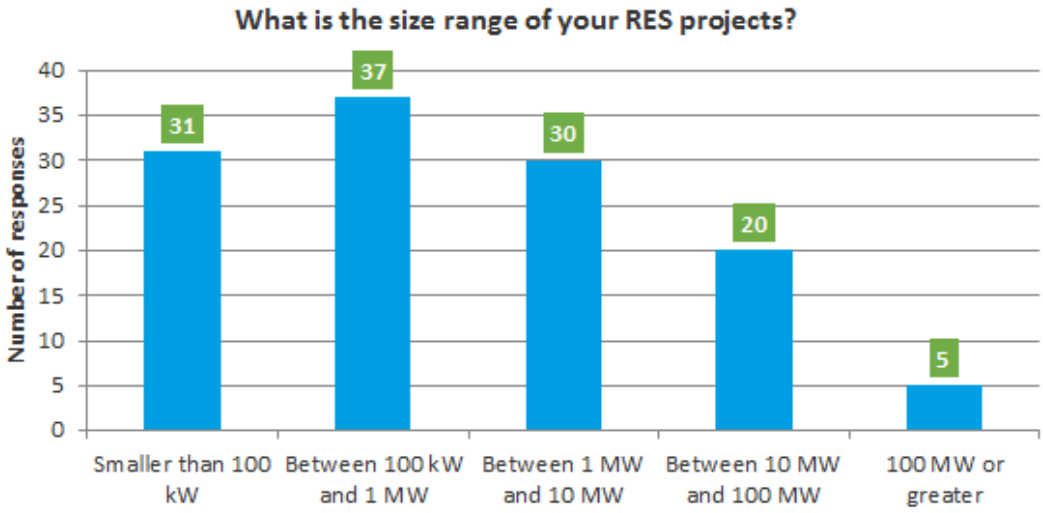
Although a technology focus seems to be apparent for PV projects developers, it is important to note that most of the developers who answered this survey work with a portfolio of different technologies. It is unknown to the extent of this survey results what is the share of project expertise of each company here represented.

The involvement of project developers with experience in renewable energies technologies with lower levels of market uptake, such as geothermal (6), and marine / tidal / wave (4), and hydrogen and fuel cells (3) might be worth to consider for further exploration by both project developers and crowdfunding platforms in terms of innovative financing mechanisms: could crowdfunding fill the gaps as an alternative and viable financing method in order to improve competitiveness of these sources? This could be beneficial for the crowdfunding platforms to shape innovative investment tools which could fit with their interests of broaden their scope of projects and attract more project developers' and investors.

Project Size Range

As Figure 2 indicates, the project developers who answered the survey have experience with projects with a wide range of sizes, with the majority having developed projects under 10MW. More than 50% however, have developed projects between 100kW to 1MW.

Figure 2 – Project Size Ranges



The size scale of a RES project influences the volume of necessary investment, affecting directly the suitability of the project for different types of investments models, including crowdfunding. Larger projects require larger investments volumes which are more accessible by traditional financing via banks. On the other hand, medium to small scale projects are harder to be financed by banks and this is the case where crowdfunding holds great potential for offering investment solutions. Another important factor influencing financing is the regulation and respective financial incentives policies which vary accordingly to project's capacity.

Geographical Coverage

Respondents were asked where their companies are active and allowed to select as many countries as they would like to. Therefore, the answers provided a good indication that the survey covered a broad geographical scope of project developer's activities.

The project developers who responded to this survey are active in most of the EU28, except for Cyprus, Lithuania and Slovenia. In the "Others" category, respondents claimed activity in parts all over the world, with focus on Middle Eastern countries, South America and Africa.

Activities involved in RES project developing have become in the recent years a quite dynamic and expanding market, especially overseas. For that reason, it is possible to observe a tendency for global operations from the results of this question.

Table 8 reveals that the UK and France had the largest representation in the survey. Significant input was also given from Ireland, Belgium, Spain, Germany, Italy and the Netherlands.

Respondents were then asked to follow up the survey by selecting one country of which they would consider to respond questions with a specific regional and national scope. The intention behind this question was to understand the regional / national / local variations of the different aspects related to financing of RES project in Europe approached in this survey.

Our goal was to cover the main crowdfunding and renewable energy markets in Europe, since little data is available on the market of crowdfunding specifically for renewable energy.

The distribution of the countries selected for answering the survey was similar with the geographical coverage of developers' activities. The main represented countries were still the UK, France, Ireland, Belgium, Spain, Germany, Italy and the Netherlands, which are among the EU leading markets in renewable energy. The UK, France, Germany, the Netherlands, Italy and Spain are also between the largest crowdfunding markets, considering the number of active crowdfunding platforms and raised investment. The share of "Others", however, has changed from 15 to 4 which allow us to narrow down more precisely the boundary for European level responses for the survey as an aggregate result. In addition, it is possible to narrow down to national level the specific opinions expressed by the respondents.

Table 8 Number of responses

United Kingdom	**16**	**Portugal**	**4**
France	**15**	**Austria**	**3**
Others	**15**	**Bulgaria**	**3**
Ireland	**10**	**Croatia**	**3**
Belgium	**9**	**Luxembourg**	**3**
Spain	**9**	**Estonia**	**2**
Germany	**8**	**Hungary**	**2**
Italy	**8**	**Latvia**	**2**
Netherlands	**8**	**Poland**	**2**
Sweden	**6**	**Czech Republic**	**1**
Finland	**5**	**Denmark**	**1**
Romania	**5**	**Malta**	**1**
Greece	**4**	**Slovakia**	**1**

Experience with RES Projects

Not all respondents are experienced project developers or have actually been involved in project developing. Of those who responded "No" to this question, 2 are associations and 4 are commercial organisations, which could be that they are starting their activities, but also, it could mean they are involved in developing RES projects only indirectly. The 12 who reported that they are currently planning to build a RES project in the selected country are part of a combination of commercial companies, cooperatives, non-profit organisations and ESCOs.

Three project developers in this question claimed not to have been able to conclude a RES project in the specified country: Croatia, Spain and Belgium. When further investigated about the reason for giving up, most of the answers involved bad experience with local bureaucracy and uncertainty regarding legislation. Finally, 37 respondents have confirmed previous experience in implementing a RES project in the selected country. This particular result confirms the inclusion of the main target group in this survey which are the commercial organisations directly involved in the RES project developing. However, the other 21 respondents who have not been involved in RES project developing also represent an important perspective of different backgrounds and experiences related to RES project developing which also have the potential to bring useful input.

Experience with Crowdfunding for Renewable Energy

Inspection of Table 2 indicates that all respondents were familiar with crowdfunding, with most capable of relating it to RES project developing although they have never used it. Out of 42 respondents to this question, 8 are not aware of the possibility of using crowdfunding as a RES project financing mechanism.

Table 2 – Familiarity with Crowdfunding for Renewables

How familiar are you with Crowdfunding?	Total
What is crowdfunding? (No knowledge)	-
I've heard about it, but what does it have to do with RES project financing?	8
I know crowdfunding, but I have never used it for financing any part of a RES project.	26
I know crowdfunding and I have used it for financing at least a part of a RES project.	8
Total	42

The survey reached a few developers with experience in crowdfunding for renewable energy, which in total represent an exact number of 8 out of 42 project developers' responses.

Financing RES Projects

This section of the survey corresponds to the questions regarding RES projects financing. The objective was to analyse what are the perceptions of project developers in RES project financing as well as identify some of the biggest gaps. In some countries, there are requirements for projects to have a define proportion of equity capital and project developers were asked about this. These requirements vary significantly not only from different regulations, but also from business to business and case by case circumstances.

Table 3 – Required Equity Percentages for RES projects

Ranges	Number of answers
10% - 20%	8
21% - 30%	4
31% - 40%	4
More than 40%	3
Skipped	1
Total	19

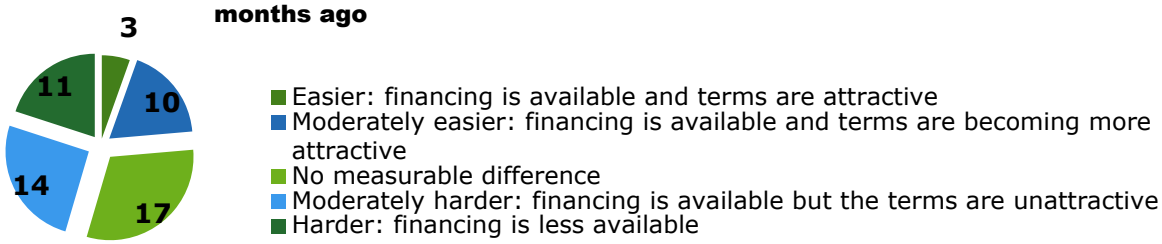
The equity percentage required by a developer is a strategic decision usually made based on risk assessments. Therefore, the reason behind this question is to understand what percentage developers are usually willing to cover by themselves in order to see if there's space for crowdfunding.

Most respondents indicated that there are no such requirements regarding this, because this is related to each project's investment profile. The respondents who answered "yes" for their respective country, were asked to further indicate the percentages of required equity capital in RES project financing. Table 3 documents higher numbers of responses between 10-20% and up to 40%. This indicates that there is a potential for crowdfunding to fill this requirements. However, care should be taken, since the share of equity of a project does not only depend on local regulation, but it depends on the financing structure of the project.

Experience with Securing Finance for RES projects

Survey participants were also asked to assess any perceptible changes in securing finance for RES projects in the short term for their selecting countries. This question aimed at collecting a general trend for financing RES projects in the EU in the view of project developers.

Figure 3 - Experiences of RES financing versus 12 months ago



The objective was to understand the potential scenario for crowdfunding to play a role as an alternative financing method. The RES market and therefore its sources of financing are sensitive to policy and regulatory signals. RES policy has been changing drastically for the past 10 years and we would like to detect how RES project financing can be dependent on short term changing in financing / policy context. In a further step, these results will be combined with the annual report on crowdfunding and energy regulation also being developed under the CrowdFundRES project. Figure 3 notes that 25 respondents believed that in the short time obtaining finance for RES projects has become harder, whereas 13 believe it has improved. A large portion remained neutral (17), claiming no measurable difference within the past year. Country-by-country analysis revealed cross-border variances. For example, in France, 6 out of 9 saw financing to be easier now, compared to only 2 out of 6 in Germany.

Experience of Securing Finance via Bank Loans

The questions in this section aimed to obtain a qualitative perspective of project developers in financing RES projects through bank loans. The majority of project developers who took the survey have experience in obtaining bank loans for RES projects.

In order to obtain a comparison of the duration of the different financing process evaluated in this survey, the developers who had experience with financing RES projects via bank loans were asked to how many weeks it takes to conclude the process on average. Project developers were asked in sequence about the level of difficulty in getting bank loans. More than half of the project developers agreed that it is difficult to obtain bank loans for RES projects.

Table 4 – Responses to Statement: "It is currently difficult to get back loans for RES projects"

Strongly Agree	12
Agree	15
Neither Disagree nor Agree	12
Disagree	7
Strongly Disagree	0
Total	46

As Table 4 indicates, 12 have demonstrated neutrality, while 7 disagree to the affirmation and none of the respondents selected "Strongly Disagree". There is no apparent difference in terms of difficulty perceptions between those with concrete experience with bank loans and those who have claimed not having used bank loans for financing. As the following table disaggregates, many have showed neutrality to the affirmation and in both cases more have agreed to the fact that is currently difficult to finance RES projects via bank loans.

Project developers were also asked about their impressions on banks having negative biases on RES projects, for example due to challenges that result in high financial risk, for example, unforeseeable development issues and reliability of technology. More than one third of the respondents to this question answered yes and the reasons why are related to their individual experience according to

the further explanations given by some of them during the survey. Most mentioned the limited knowledge of bankers in RES in order to properly assess risks. Another aspect frequently said is that banks are negatively biased due to the high uncertainties caused by the constant changes in the RES legal framework and low support from governments financially. Some respondents provided feedback to local issues. More specifically for example, respondents from Greece mentioned the role that the current financial situation plays in contributing to the increase in the opposition of the banks in offering loans for RES projects. Input from Ireland attempts for biases against small community projects, for example in the case of renewable energy cooperatives. Besides a general lack of training and qualification about renewable energy and the risks of a project, they also claim that the process is subject to political interference.

In Italy it was mentioned that there is a larger necessity for warranties when it comes to RES projects: "Although banks have generally developed, in previous years, specific products for renewable projects, they tend not to encourage their use and suggest instead the use of standard financial products with high cost and ask for a large support of customer warranties."

Local/ National / Regional / EU funding programs

In this part of the survey, the questions aimed at identifying available sources of public funding and the project developer's perceptions about it. Amongst those who had received public support, the existent regional support programs for RES mentioned were as shown in Table 5.

Table 5 – Existing Support Programmes for RES

Netherlands	- Stimulation of Sustainable Energy Production - TKI (annual budget available to provide financial aid for innovative projects in renewable energy)
Germany	- Germany Renewable Energy Act (EEG) - Grants from the Federal Ministry for Economic Affairs and Energy
Italy	- Tax deduction of the total cost for natural persons. - Feed-in Tariffs - Conto termico: partial reimbursement of expenditure for thermal energy production projects. - Tenders issued by local public administrations
Croatia	- Business Innovation Croatian Investment Agency (BICRO)
Spain	- JEREMIE energy
France	- Fond Chaleur; Fonds BEI - Subventions françaises Bercy DG Trésor, programme - Agence française de développement local - Fonds Régional d'Excellence Environnementale Poitou-Charentes (FREE) - OSEO - ADEME
Ireland	- SEAI Grants
Europe	- Horizon 2-2- - European Regional Development Funds (ERDF)

The majority of the respondents to this question (16 out of 26) have never obtained funding via support programs from regional authorities. The reasons for the low adhesion in local support programs can be related to the difficulty (or impression of being difficult) in obtaining the funding. Project developers with experience with support programs have a more positive view on the difficulty of the process. Regarding the duration of the process in obtaining support from EU or local

programs, most of the project developers with experience in this kind of financing mechanism replied to be difficult to evaluate, since it varies quite significantly or because they did not have the access to this information. From the rest, it is possible to see that the majority says it takes about 20 to 30 weeks.

Barriers Related to RES Project Finance

Following the assessment of project developers' experience with bank loans and regional support programs, the survey questions focus on the barriers in securing finance for RES projects. When asked about the main obstacles, project developers ranked the issues listed below in the following graph, from different levels, from "Very important" to "Very unimportant". Table 6 shows the ranking of the issues according to what the majority of the project developers have chosen. In conclusion, uncertainties involving policy framework, infrastructure such as the grid access as well as over planning and consenting processes represent the major obstacles.

Table 6 – Barriers to RES

Uncertainties over policy framework relating to incentives or support mechanisms	1
Uncertainties over securing the necessary infrastructure including grid access	2
Uncertainties over planning and consenting processes	3
Uncertainties over securing a satisfactory offtake / Power Purchase Agreement	4
Uncertainties over the availability of other sources of funding to sustain the company's growth plans	5
Too much documentation required in order to process the loan request	6
No low interest loans provided by state owned or private banks	7
Too much equity capital required	8
Uncertainties over securing a satisfactory EPC / Turnkey / O&M contract, level of defect and performance warranties	9
Interest rates are too high	10
Due diligence requirements including deal timetable	11
Inappropriate size of your request (project too small)	12
Inexperienced management team (no track record)	13
Uncertainties over technology performance	14

Survey respondents were also encouraged to explore further the barriers and bottlenecks related to project finance and leave their own remarks in an open response field. Their visions on the main barriers regarding RES project finance could be summarised as: Cost-competitiveness with other sources of energy; Uncertainties regarding support schemes and RES incentives; Lack of knowledge in renewable energy; Lack of incentives.

Table 7 – Responses to the Question: "How Familiar are you with crowdfunding?"	**Total**
What is crowdfunding? (No knowledge)	-
I've heard about it, but what does it have to do with RES project financing?	8
I know crowdfunding, but I have never used it for financing any part of a RES project.	26
I know crowdfunding and I have used it for financing at least a part of a RES project.	8
Total	42

Crowdfunding for Renewable Energy

The questions in this section aimed at collecting the perception about crowdfunding for RES projects from developers who answered that they have already used crowdfunding.

The results for this question, summarised in Table 7, indicate that project developers are aware of crowdfunding. Zero project developers have replied not having knowledge about crowdfunding. This is a positive result because it shows that the concept of crowdfunding is already known by the respondents. However, 8 project developers would do not relate crowdfunding as an actual mechanism for financing of RES projects. A good sign is that, even though the majority (32) has never used crowdfunding, 26 are aware that this could be used as a method of financing RES projects, although they have never used as such. The mix of technology covered by these organisations is also quite diverse. The majority works with PV and Energy Efficiency; however, they have claimed to work with several other technologies, such as storage, biomass and wind. The project developers who have used crowdfunding have experience with both equity-based crowdfunding (contributors become shareholders in the project) and debt or lending based crowdfunding (contributors receive interest on amount lent). One developer mentioned having participated in a compensation based crowdfunding campaign, namely Sweat Equity, for a project aiming at developing a new technology.

Most of the project developers had positive experience with crowdfunding. According to RES project developers who have used crowdfunding, the main advantage of this financing mechanism is related to the facility and the time length of the process (see table below). According to 2 project developers, crowdfunding made financing easier and faster. Also, crowdfunding helped to improve the project visibility in terms of public acceptance. Regarding the costs, some of the respondents seem quite divided: one believes it was cheaper, but one believes it was more expensive. The differences related to costs of crowdfunding are associated to the individuality of each project and country. Costs vary from case to case and depend on many factors associated to investment risks and expected return from the investors. Trying to understand these factors will be part of the following project activities.

Out of 8 project developers with crowdfunding experience, five replied to the question regarding the time length to obtain the funding. One developer mentioned his project to take 8 weeks for being funded and other two participants have responded saying it took about 12 weeks, while another one mentioned 40 weeks. One cooperative described a campaign that lasted for 10 months which was organized by them and not via a crowdfunding platform. The rest of the respondents mentioned the campaign to be ongoing or that this information was not available. When asked about their overall experience with crowdfunding for RES financing, project developers are positively in favour of repeating the experience and recommend it. Seven would consider re-using it. Participants were encouraged to explain why they would or would not use/recommend crowdfunding for RES projects. The reasons given are shown in Table 9:

Table 9 – Reasons for not Recommending/Using Crowdfunding for RES

"Crowdfunding is the perfect way to connect people in the area of the RES project."
"Easy way to raise money from people that are willing to invest (and have the money) at low interest rates."
"As alternative and faster finance device."
"It is a great alternative to the common financing options."
"Less loans available in the financing banks."
"Crowdfunding could be used to promote renewables in regions that they lack electricity, better than private investments…"
"Very limited financing alternatives."
"Need of a decentralization policy for energy production and a new appropriation of RES power plants by citizens: "energy by people for people"."
"We already have the full infrastructure set up. Very low cost of obtaining the money. Investing means more involvement from our members."
"It's a good way to get people in the community involved in the process as well as opening the process to other people across Ireland."
"Community buy in."
"New laws allow easier equity funding from unaccredited investors."
"Facilitates local public acceptance of projects, including wind power, involving the local population."
"Facilitates financing from own funds in projects."
"Contributes to the citizen energy transition."
"To promote local acceptance and raise equity cheaper than current market conditions."
"Increase local acceptance - reducing the required equity interest."
"Interesting approach."

Crowdfunding x Bank Loans x Support Programs

In this section, we make a comparison between the different financing mechanisms approached in this survey in terms of the project developers' impressions on difficulty levels and their data provided for duration of the financing process. The summary of the answers regarding the difficulty level of each type of financing mechanism is shown in Table 10. The integer values in the table mean the number of responses for each item. The fractions inside the parenthesis mean the index: number of responses / total of responses. Although there is different amount of responses and perhaps too low of a sample to withdraw concrete conclusions, the index provides us with a notion of proportion.

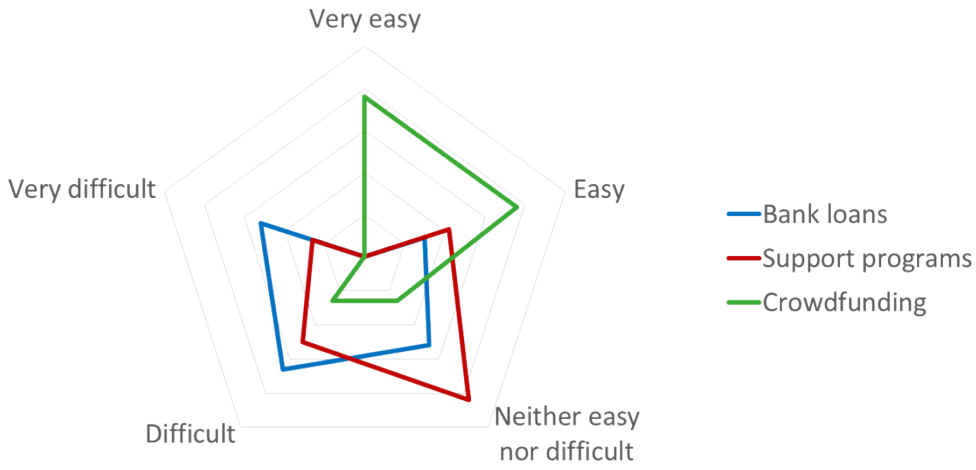


Table 10 – Difficulty with Specific Financing Mechanisms

How difficult did you find the process?	Bank loans	Support programs	Crowdfunding
Very easy	0 (0.00)	0 (0.00)	3 (0.38)
Easy	7 (0.15)	5 (0.21)	4 (0.38)
Neither easy nor difficult	12 (0.26)	10 (0.42)	1 (0.13)
Difficult	15 (0.33)	6 (0.25)	2 (0.13)
Very difficult	12 (0.26)	3 (0.13)	0 (0.00)
Total	46 (1.00)	24 (1.00)	8 (1.00)

Apparently, there is a positive reaction from those with experience in crowdfunding regarding the easiness of the project, although with exceptions. For bank loans and support programs, zero project developers affirmed to be "very easy" and more respondents have identified the process as difficult or very difficult. On the other hand, the answers for crowdfunding show a different trend; more respondents have identified the process to be easy or very easy, while no project developers have identified it to be "very difficult". For support programs, there could be an indication that perhaps they are easier than bank loans, due to a larger proportion of neutral answers.

The survey investigated how long it takes for each of the financing mechanisms to be completed in the experience of the project developers. In Table 10, the integer values are the number of responses for each item. The fractions inside the parenthesis mean the index: number of responses / total of responses. Half of the project developers who answered this question affirmed that bank loans take 10 to 20 weeks in their experience, which could indicate some consistency. It is with bank loans type that the highest share of developers saying in average taking less than 10 weeks to complete the process which could be an indication that bank loans are the faster process.

CONCLUSIONS FROM PROJECT DEVELOPER SURVEY

This section summarises the findings of the survey: renewable energy project developers – perception of crowdfunding. This survey was designed to collect the impressions of renewable energy project developers regarding financing, public funds and crowdfunding.

In general, project developers identify a hostile environment for financing renewable energy projects with bank loans as well as with public funding from regional support programs. The reasons project developers raised for that can be summarized as:

- Cost-competitiveness with other sources of energy.
- Uncertainties regarding support schemes and RES incentives.
- Lack of knowledge in renewable energy.
- Lack of incentives.

Eight project developers claimed to have experience with crowdfunding for RES projects from the Netherlands, Germany, Sweden, Spain and France. The different countries here represented could mean that crowdfunding is already a European spread financing mechanism, despite the low uptake.

These project developers have identified themselves as part of different target groups, such as commercial companies, cooperatives, one public entity and one association. This indicates that crowdfunding has the potential to broaden the ownership models of RES projects.

In terms of overall satisfaction, most of the project developers had a positive experience with crowdfunding and are positively in favour of repeating the experience and recommend it. The main advantages of using crowdfunding raised by developers are:

- Simpler and faster process
- Improvement of public acceptance

Regarding the costs of financing via crowdfunding no concrete conclusion could be extracted in this survey and will be further investigated.

Participants with no experience in using crowdfunding have shown positive intentions regarding the possibility of using it in the future.

Overall Survey Conclusions

This report provides an overview of the results of three surveys directed at: (i) the EU public; (ii) crowdfunding platforms; and (iii) RES project developers. The findings provide a detailed picture of the current state of opinion across the EU regarding the present state and future potential of the sector, and should serve as useful input to the formulation of guidelines and policy recommendations.

The evidence suggests that there are grounds for optimism about what might be achieved going forward. In particular, there was clear evidence in the public survey of widespread positivity regarding the prospects for crowdfunding for RES, allied to findings that suggest prior experience of such funding is more likely to encourage its use for RES in the future. Similarly, the survey of project developers indicated that the positive link between prior experience and the propensity to become involved again in crowdfunding for RES was also evident amongst these groups.

However, when looking at the future development of the renewables crowdfunding sector it is also important not to lose sight of some of the less favourable perceptions revealed in the current document. First, and notwithstanding the positive experiential evidence reported by project developers, these respondents perceived the environment for crowdfunding of RES to be unfavourable, reflecting concerns over cost, lack of incentives and knowledge gaps. Some of these issues underpinned the worries evident in the survey of crowdfunding platforms. The evidence in the latter suggested that: information asymmetry between non-professional investors and platforms; lack of transparency on the part of project developers; and the failure to develop a common legal framework across Europe are all perceived as substantive problems by those involved with funding co-ordination. Thus, optimism about the inherent advantages and potential of crowdfunding for RES seems to co-exist with developer and platform concern over transparency, cost and (the absence of) regulatory harmonisation.

Any recommendations should therefore be carefully married to underlying perceptions regarding the sector that are multi-layered, complex and – in terms of providing clues as to the likelihood of progress – not necessarily consistent. This is a picture as one would expect it arising from the very rapid development of a sector that is based on continuously changing technologies and crosses the boundaries of legislatures each pursuing these developments in terms of their own means, perspectives and approaches while trans-national bodies including the EU seek to balance competitive diversity with the need to encourage compatible approaches and outlooks to alternative sources of finance to help further build the green economy.

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 646435.